



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,227	09/18/2003	Jae Hak Yee	AMKOR-012G1	7012
7663	7590	02/25/2005	EXAMINER	
STETINA BRUNDA GARRED & BRUCKER 75 ENTERPRISE, SUITE 250 ALISO VIEJO, CA 92656			ROSE, KIESHA L	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/667,227	YEE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kiesha L. Rose	2822	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 27-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 27-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/6/04</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

This Office Action is in response to the amendment filed 21 December 2004.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 27-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Yagi et al. (U.S. Patent 6,201,292).

Yagi discloses a semiconductor device (Figs. 7 and 12) that contain a flat paddle (24) having an upper surface and that is partially etched which extends about the periphery, a plurality of leads (22) arranged adjacent to the paddle, at least some of the leads each having a lower surface, an upper surface and a lead lock comprising at least one disk shaped protrusion (the circle shaped element in Fig. 12), which is partially defined by the upper surface of the lead and includes a bottom surface positioned between the upper and lower surfaces of the lead, a semiconductor chip (27) having a lower surface and mounted on the upper surface of the paddle by a thermally conducting adhesive (26), conductive wires (28) each electrically connecting respective

Art Unit: 2822

ones of the leads to the chip, a resin encapsulant (29) defining the bottom surface and at least partially encapsulating the chip, lead lock of the leads and the conductive wires wherein a portion of the lower surface of each of the leads is exposed at the bottom of the encapsulant, a plating layer applied to the lower surface of the leads (bond pad(22b)), a plurality of solder balls (30) being attached to the lower surface of the leads and serving as an external input/output terminal.

Claims 37 and 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Okumura et al. (U.S. Patent 5,942,794).

Okumura discloses a semiconductor device (Fig. 11) that contains a flat paddle (102) having an upper surface and that is partially etched which extends about the periphery, a plurality of leads (104) arranged adjacent to the paddle, at least some of the leads each having a lower surface and a lead lock comprising inclined sidewalls having an increased width defined therebetween in an upward direction from the lower surface, a semiconductor chip (103) having a lower surface and mounted on paddle, conductive wires (105) each electrically connecting respective ones of the leads to the chip and a resin encapsulant (106) defining the bottom surface and at least partially encapsulating the chip, lead lock of the leads and the conductive wires wherein a portion of the lower surface of each of the leads is exposed at the bottom of the encapsulant.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura in view of Yagi.

Okumura discloses all the limitations except for a plurality of solder balls and adhesive on the paddle and chip. Whereas Yagi discloses a paddle (24), a plurality of leads (22) arranged adjacent to the paddle, a semiconductor chip (27) having a lower surface and mounted on paddle by a thermally conducting adhesive (26), conductive wires (28) each electrically connecting respective ones of the leads to the chip, a resin encapsulant (29) defining the bottom surface and at least partially encapsulating the chip, lead lock of the leads and the conductive wires wherein a portion of the lower surface of each of the leads is exposed at the bottom of the encapsulant, a plating layer applied to the lower surface of the leads (bond pad(22b)) and a plurality of solder balls (30) being attached to the lower surface of the leads and serving as an external input/output terminal. The solder balls were formed on the bottom of the leads for electrical connection to the outer circuit substrate. (Column 5, lines 13-16) Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Okumura by incorporating solder balls to the end of the leads to form electrical connection to the outer circuit substrate as taught by Yagi.

### ***Response to Arguments***

Applicant's arguments with respect to claims 27-41 have been considered but are moot in view of the new ground(s) of rejection. Applicant's argued that the Okumura reference does not disclose the claimed invention this is erroneous since the Okumura reference disclose the lead (104) to have inclined sidewalls which increase from the lower surface upward and therefore do disclose the invention. In addition the Yagi reference discloses the lead lock to have disk shaped protrusion as can be seen in Fig. 12. Also in Fig. 7 it shows the chip mounted on the upper surface of the paddle and Fig. 11 shows an **alternate** way to mount the chip to the paddle so therefore the chip is still mounted on the upper surface of the paddle. Therefore the rejection stands.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 571-272-1844. The examiner can normally be reached on M-F 8:30-6:00 off 2nd Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2822

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
KLR

  
**AMIR ZARABIAN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**